

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DARWIN P. RACKLEY
and RODERICK M.P. WEST

Appeal No. 95-4361
Application 08/043,320¹

ON BRIEF

Before THOMAS, BARRETT and LEE, Administrative Patent Judges.
LEE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-14. No claim has been allowed.

References relied on by the Examiner

Ishii	4,789,854	Dec. 6, 1988
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¹ Application for patent filed April 6, 1993.

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Lucas et al. (Lucas)	5,081,450	Jan. 14, 1992
Rumball	5,124,688	Jun. 23, 1992
Kubo (Japanese Kokai)	2-130594	May 18, 1990

The Rejections on Appeal

Claims 1-5 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over Ishii.

Claim 6 stands finally rejected under 35 U.S.C. § 103 as being unpatentable over Ishii and Lucas.

Claim 7 stands finally rejected under 35 U.S.C. § 103 as being unpatentable over Ishii and Kubo.

Claim 8 stands finally rejected under 35 U.S.C. § 103 as being unpatentable over Rumball.

Claims 9-11 and 13-14 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over Rumball and Lucas.

Claim 12 stands finally rejected under 35 U.S.C. § 103 as being unpatentable over Rumball, Lucas, and Ishii.

The rejection of claim 1 in the final Office action under 35 U.S.C. § 112, second paragraph, as being indefinite was not reiterated in the examiner's answer and is presumed to have been withdrawn. Note that the appellants' amendment to claims 1 and 5, filed subsequent to the final Office action, has been entered.

Claims 1 and 8 are independent claims and are reproduced
below:

1. A color image display system comprising:

a source of encoded data in a first format, said data representing elements of a color image; said first format characterized in that it is not directly displayable by said system;

means responsive exclusively to data encoded in a second format different from said first format for displaying color images; said data in said second format comprising data representing discrete pixel elements of the displayed image; and

format conversion means coupled between said source and said image displaying means for converting said source data to corresponding data in said second format in real time coordination with display generation operations of said image displaying means; said conversion means performing a process of generating sums of product terms wherein the product terms are determined by multiplying data components in said first format by predetermined constant functions which are subject to being varied to adjust for a variety of factors in the source data and the image displaying means, said conversion means comprising:

at least one RAM storage array receiving data from said source as addressing inputs, each said at least one array containing a programmable lookup table for generating all of said product terms in said process; and

dedicated logic means receiving data from said source and product term data from said at least one RAM storage array and forming sums of data received from said source and said at least one array to complete said conversion process.

8. A circuit arrangement for converting data in a YUV format, representing a natural image, into displayable image data in an RGB format comprising:

RAM storage means containing one or more lookup tables of information representing products U and V components of pixel elements in said natural image respectively multiplied by predetermined constants;

means for applying addressing data to said RAM storage means representing said U and V components of consecutive pixels in said natural image scanned in a predetermined raster pattern; and

logic means responsive to information read out of said RAM storage means in response to said addressing data, and to data representing Y image components corresponding to respective said addressing data, for producing signals representing discrete R, G and B attributes of displayable pixels corresponding to said scanned natural image pixels.

The Invention

The invention is directed to a system for converting color image data in a first format into a second format for display on computer color monitors. The procedure is divided into two stages, with the second stage taking as one of its inputs the output from the first stage. First, product terms involving components of the source data and predetermined constants are generated by use of a programmable lookup table in a RAM, and then the product terms are summed with another component of the source by use of a logic means. The product terms are generated

in a first stage and then the results are summed with another source component in a second stage. Claim 8 specifies the conversion as being from the YUV format to the RGB format, and specifies that the product terms involve the U and V components of the source data and that the logic means takes as input the Y component. However, claim 8 does not specifically specify summing as the operation performed by the logic means.

Opinion

We reverse the rejection of claims 1-14 on the grounds as applied by the examiner.

Contrary to the examiner's view, Ishii does not disclose a two-stage format conversion process wherein the product terms are generated in a first stage and applied to a logic means in a second stage, which logic means also takes as input a separate component of the source data. The appellants are correct that in Ishii, the look-up table 36 and the logic circuit means 37 (see Figure 7) operate in parallel in the same manner as the prior art components 5 and 8 shown in Ishii's Figure 2. The selector 35 in Ishii's Figure 7, as is the selector 6 in Ishii's Figure 2, selects which data to provide as output (column 8, lines 11-22) and is not a logic means which receives a separate component of

the source data for further processing with the product outputs from the look-up table. Note that the outputs from Ishii's look-up table 36 and logic circuit 37 are evidently already in RGB format (column 7, lines 38-46).

Claim 6 depends indirectly from claim 1, and claim 7 depends indirectly from claim 1. Claim 6 is rejected based on the combined teachings of Ishii and Lucas and claim 7 is rejected based on the combined teachings of Ishii and Kubo. The appellants correctly note that Lucas "does not suggest any aspect of the two-stage conversion characterized in parent claim 1" (Br. at 7). The examiner relied on Lucas only in connection with the chrominance sub-sampling feature particularly recited in claim 6. Accordingly, Lucas does not make up for the deficiencies of Ishii. Similarly, the appellants correctly note that Kubo does not suggest a two-stage conversion process as the appellants have claimed (Br. At 8), and the examiner has not relied on Kubo for that feature (answer at 10). Thus, Kubo does not make up for the deficiencies of Ishii.

With regard to claim 8, the appellants are correct that Rumball teaches a one-stage conversion wherein the entire conversion is effected through access to a single lookup table 28

whose output is the desired R, G and B data (see Figure 1). The appellants are correct in stating that the control logic unit 40 is used for timing and controlling the access to decoder 18 and the lookup table 28 (Br. At 9). The logic 40 does not constitute a second stage conversion section taking as inputs the output from the lookup table 28 and another component from the source.

Claims 9-14 all depend either directly or indirectly from claim 8. Claims 9-11 and 13-14 are rejected over the combination of Rumball and Lucas. Claim 12 is rejected over the combination of Rumball, Lucas and Ishii. As already explained above, neither Lucas nor Ishii suggests the two-stage conversion process claimed by the appellants. Therefore, neither makes up for the deficiencies of Rumball.

For the foregoing reasons, we reverse the rejection of claims 1-14.

Conclusion

The rejection of claims 1-5 under 35 U.S.C. § 103 as being unpatentable over Ishii is reversed.

The rejection of claim 6 under 35 U.S.C. § 103 as being unpatentable over Ishii and Lucas is reversed.

The rejection of claim 7 under 35 U.S.C. § 103 as being

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unpatentable over Ishii and Kubo is reversed..

The rejection of claim 8 under 35 U.S.C. § 103 as being
unpatentable over Rumball is reversed.

The rejection of claims 9-11 and 13-14 under 35 U.S.C. § 103
as being unpatentable over Rumball and Lucas is reversed.

The rejection of claim 12 under 35 U.S.C. § 103 as being
unpatentable over Rumball, Lucas, and Ishii is reversed.

REVERSED

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JAMES D. THOMAS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	
Administrative Patent Judge)	APPEALS AND
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JAMESON LEE)	
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